REMARKS

Status of the Claims

Claims 1-6 and 8-10 are pending in the above-identified application and stand ready for further action on the merits. In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Drawings

Since no objection has been received, Applicants assume that the drawings are acceptable and that no further action is necessary. Confirmation thereof is respectfully requested.

Issues under 35 U.S.C. § 103(a)

Claims 1-3, 5, and 8-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over **Isozaki** (U.S. Patent 6,337,369) in view of **Starzewski** (U.S. Patent 5,670,092).

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over **Isozaki** in view of **Starzewski** further in view of **DesMarais et al.** (U.S. Patent 6,362,244).

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over **Isozaki** in view of **Starzewski** further in view of **Dempo** (U.S. Patent 5,512,178).

Applicants respectfully traverse. Reconsideration and withdrawal of each of the above rejections are respectfully requested based on the following considerations.

Legal Standard for Determining Prima Facie Obviousness

MPEP § 2141 sets forth the guidelines in determining obviousness. First, the Examiner has to take into account the factual inquiries set forth in *Graham v. John Deere*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), which has provided the controlling framework for an obviousness analysis. The four *Graham* factors are:

(a) determining the scope and content of the prior art;

(b) ascertaining the differences between the prior art and the claims in issue;

(c) resolving the level of ordinary skill in the pertinent art; and

(d) evaluating any evidence of secondary considerations.

Graham v. John Deere, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

Second, the Examiner has to provide some rationale for determining obviousness. MPEP § 2143 sets forth some rationales that were established in the recent decision of *KSR International Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). Exemplary rationales that may support a conclusion of obviousness include:

(a) combining prior art elements according to known methods to yield predictable results;

(b) simple substitution of one known element for another to obtain predictable results;

(c) use of known technique to improve similar devices (methods, or products) in the same way;

(d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(e) "obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success

(f) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(g) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

As the MPEP directs, all claim limitations must be considered in view of the cited prior art in order to establish a *prima facie* case of obviousness. *See* MPEP § 2143.03.

The Present Invention

Independent claim 1 recites:

> A method for producing a polarizing film comprising the step of dipping a polyvinyl alcohol film in/on which iodine is adsorbed and oriented in an aqueous solution containing boric acid at a temperature of 55 to 85°C wherein contact between the aqueous solution and oxygen is suppressed,
>
> wherein a weight ratio of water:boric acid:potassium iodide in said aqueous solution containing boric acid is 100:(2-15):(2-20).

The present invention relates to a method for producing a polarizing film of a polyvinyl alcohol having no polyvinylene structure comprising dipping a polyvinyl alcohol film in/on which iodine is adsorbed and oriented in an aqueous solution containing boric acid in which the contact between the aqueous solution and oxygen is suppressed. Because the contact between the aqueous solution and oxygen is suppressed, the contrast of a polarizing film produced is significantly increased.

Prior to the present invention, it was not known to produce a polarizing film by dipping a film in an aqueous solution containing water, boric acid, and potassium iodide in a weight ratio of 100:(2-15):(2-20) at a temperature of 55 to 85°C while suppressing the contact of the aqueous solution with oxygen. Also, the effect of increasing the contrast of the polarizing film by such a production method was not known.

Distinctions Over the Cited References

Isozaki discloses a polarizing film comprising polyvinyl alcohol (PVA) having a polyvinylene structure. In the production method of **Isozaki**, the polyvinyl alcohol film is subjected to dry-heat stretching at a temperature of 100 to 250°C (col. 4, lines 1-5). During the stretching, the film may be discolored due to the oxidation of PVA. To avoid such discoloration, the dry-heat stretching is preferably conducted in an oxygen-poor atmosphere such as a nitrogen atmosphere or in vacuum (col. 4, lines 7-11).

Starzewski discloses a polarizing film based on polyvinyl alcohol containing polyacetylene as the light-polarizing substance. The POLPAC film (a polarizing film of PVA which comprises polyacetylene as a dichroic substance) is heated at a temperature of between 100°C and 300°C (col. 2, line 66 to col. 3, line 12). Before the POLPAC film is heated at such a high temperature, the POLPAC film is provided with a protective layer, which is impermeable to oxygen, such as a silicate layer, to increase the degree of polarization of the POLPAC in a wavelength range of 400-500 nm by the optimization of the structure of polyacetylene (col. 2, lines 22-27).

In the method for producing a polarizing film according to the present invention, the PVA film in/on which iodine is adsorbed and oriented is dipped in an aqueous solution of boric acid at a temperature of 55 to 85°C while the contact between the aqueous solution and oxygen is suppressed.

As such, the polarizing film to be treated according to the present invention is different from the films disclosed by **Isozaki** or **Starzewski**.

As previously argued, the Examiner has not established a *prima facie* case of obviousness because the method of the present invention suppresses the contact of an aqueous solution of boric acid to oxygen but not the contact of the film to oxygen.

The Examiner still alleges:

> It is obvious at this point that if contact between oxygen and the PVA film is not suppressed between the pretreatment and the posttreatment heating step, oxygen in contact with the PVA film will be carried into the posttreatment step and cause undesirable negative effects. The combination of the prior art as presented comprises three steps – pretreatment, dipping and posttreatment. Therefore, it would have been obvious to suppress contact between the PVA film and oxygen during the dipping step. Since the PVA film comes into direct intimate contact with the aqueous solution during the dipping step, it would have been obvious to suppress contact between the aqueous solution and oxygen so that the aqueous solution could not transfer oxygen into contact with the PVA film, leading to deleterious effects in the posttreatment step.

Applicants respectfully traverse. As described above, **Isozaki** discloses a polarizing film comprising polyvinyl alcohol (PVA) having a polyvinylene structure and a method for producing such a polarizing film. **Starzewski** discloses a polarizing film based on polyvinyl alcohol containing polyacetylene as a light-polarizing substance and a method for producing such a polarizing film.

In contrast, the polarizing film to be treated by the method of the present invention is a PVA film in/on which iodine is adsorbed and oriented. That is, to impart the polarization property to a PVA film, iodine is adsorbed in/on the film and oriented.

Although the present invention, **Isozaki**, and **Starzewski** commonly use a PVA film as a base film, the kinds and structure of substrates used to impart the polarization property to the PVA film are different among the present invention, **Isozaki**, and **Starzewski**. Thus, it is meaningless to discuss the similarity of each treating step.

Among the present invention, **Isozaki**, and **Starzewski**, the key conditions in the method for producing the polarizing film are different since the structures of the polarizing films to be produced or treated are different. Therefore, it is meaningless to combine the different methods for producing the different polarizing films. The method of the present invention would not have been obvious from the combination of **Isozaki** and **Starzewski** since the structure of the polarizing film to be produced by the method of the present invention is different from the structures of the polarizing films of **Isozaki** and **Starzewski**.

In addition, **Isozaki** describes that the dry-heat stretching, which is carried out at a temperature of 100 to 250°C, is preferably conducted in an oxygen-poor atmosphere such as a nitrogen atmosphere or in vacuum. However, with regard to wet stretching, which is carried out at a temperature of 20 to 90°C, **Isozaki** never describes that the wet stretching is carried out in such an oxygen-poor atmosphere. Furthermore, **Isozaki** does not teach that the treatment of the film with a boric acid solution after stretching is carried out in an oxygen-poor atmosphere.

Isozaki discloses that, in the production of a polarizing film comprising polyvinyl alcohol (PVA) having a polyvinylene structure, it is preferable to use an oxygen-poor atmosphere when the PVA film is stretched at a high temperature of 100°C or higher (dry-heat stretching). **Isozaki** never discloses or teaches the use of an oxygen-poor atmosphere when the PVA film is stretched at a relatively low temperature of lower than 100°C (wet-stretching). Rather, **Isozaki** suggests that the polarizing film may not be discolored by oxygen in the wet-stretching step at a relatively low temperature. In addition, **Isozaki** never discloses or teaches to carry out the treatment with boric acid in an oxygen-poor atmosphere. Thus, **Isozaki** suggests that the polarizing film may not be discolored by oxygen during the treatment of the polarizing film with boric acid.

Starzewski discloses the exclusion of oxygen in the heat-treatment step at a temperature between 100°C and 300°C. As **Isozaki** does, **Starzewski** teaches that oxygen is preferably excluded in the treatment of the film at a high temperature of 100°C or higher.

According to the present invention, the treatment of the film with the boric acid solution is carried out at a temperature of 55 to 85°C, which is much lower than the temperature at which **Isozaki** or **Starzewski** treats the film when excluding oxygen.

Therefore, the treatment of the film with boric acid solution according to the present invention is not a high temperature treatment as recommended by **Isozaki** or **Starzewski**. Furthermore, **Isozaki** carries out the treatment of the film with boric acid in an atmosphere. Accordingly, the suppression of contact between the boric acid solution and oxygen as is done in the method of the present invention would not have been obvious from **Isozaki** or **Starzewski**.

The Examiner asserts that it would have been obvious to suppress the contact of oxygen during the treatment of the film with boric acid by combining the preference of the oxygen-poor atmosphere in the pretreatment and the exclusion of oxygen in the posttreatment. However, **Isozaki** or **Starzewski** teaches the preference of an oxygen-poor atmosphere or the exclusion of oxygen in the treatment of the film at a high temperature of 100 to 250°C or 100 to 300°C. In fact, according to **Isozaki**, it is not recommended to carry out the treatment of the film with boric acid in an oxygen-poor atmosphere.

As discussed above, **Isozaki** in view of **Starzewski** do not disclose each and every aspect of the pending claims. Applicants respectfully submit that **DesMarais et al.** and **Dempo** do not cure the above noted deficiencies of **Isozaki** and **Starzewski**. As such, each of pending claims 1-6 and 8-10 are also patentable and non-obvious over these cited references, even when combined with the disclosures of **Isozaki** and **Starzewski**.

To establish a *prima facie* case of obviousness of a claimed invention, all of the claim limitations must be disclosed by the cited references. As discussed above, **Isozaki** in view of **Starzewski**, with or without the other cited references, fail to disclose all of the claim limitations of independent claim 1, and those claims dependent thereon. Accordingly, the combination of references does not render the present invention obvious.

Furthermore, the cited references or the knowledge in the art provide no reason or rationale that would allow one of ordinary skill in the art to arrive at the present invention as claimed. Therefore, a *prima facie* case of obviousness has not been established, and withdrawal of the outstanding rejections is respectfully requested. Any contentions of the USPTO to the contrary must be reconsidered at present.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Chad M. Rink, Registration No. 58,258, at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized in this, concurrent, and future replies to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

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Respectfully submitted,

By _____

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